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222
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A.D. 1897. APRIL 10. N° 9196.

PLUNKETT & *another's* COMPLETE SPECIFICATION.

(1 SHEET)

FIG 1.

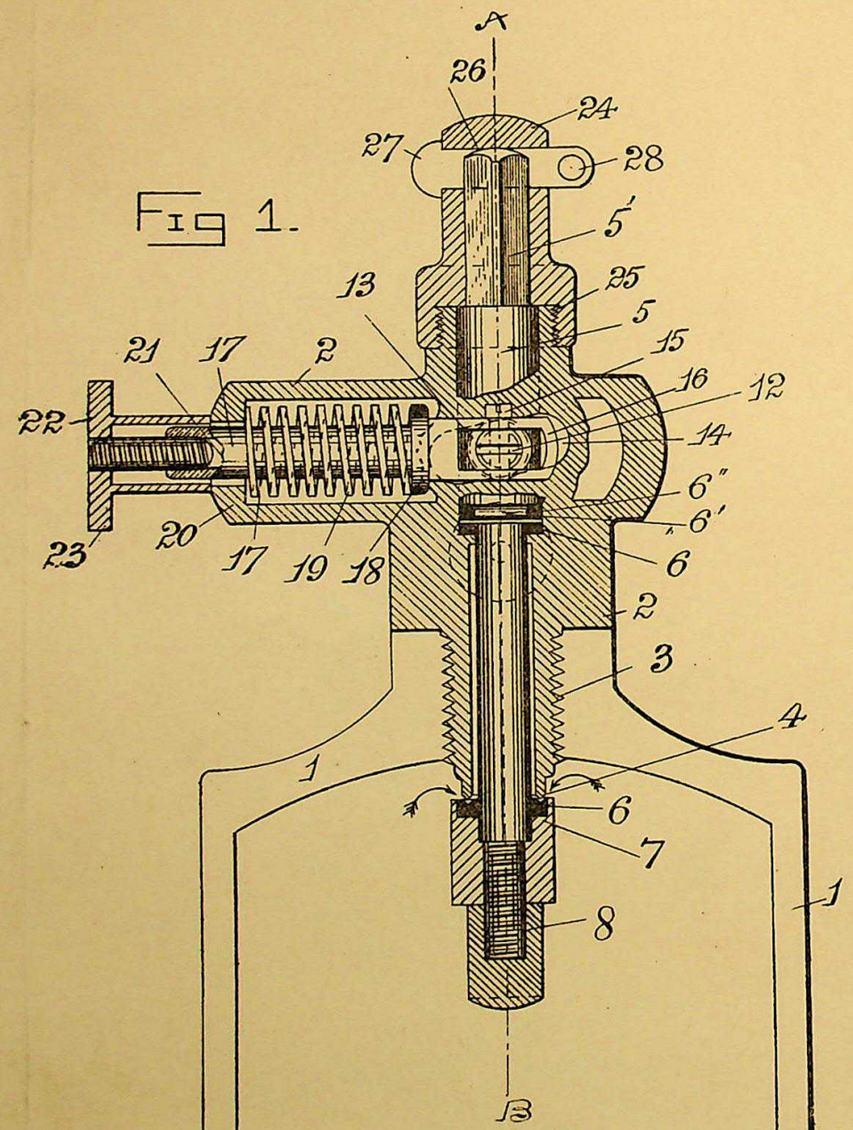
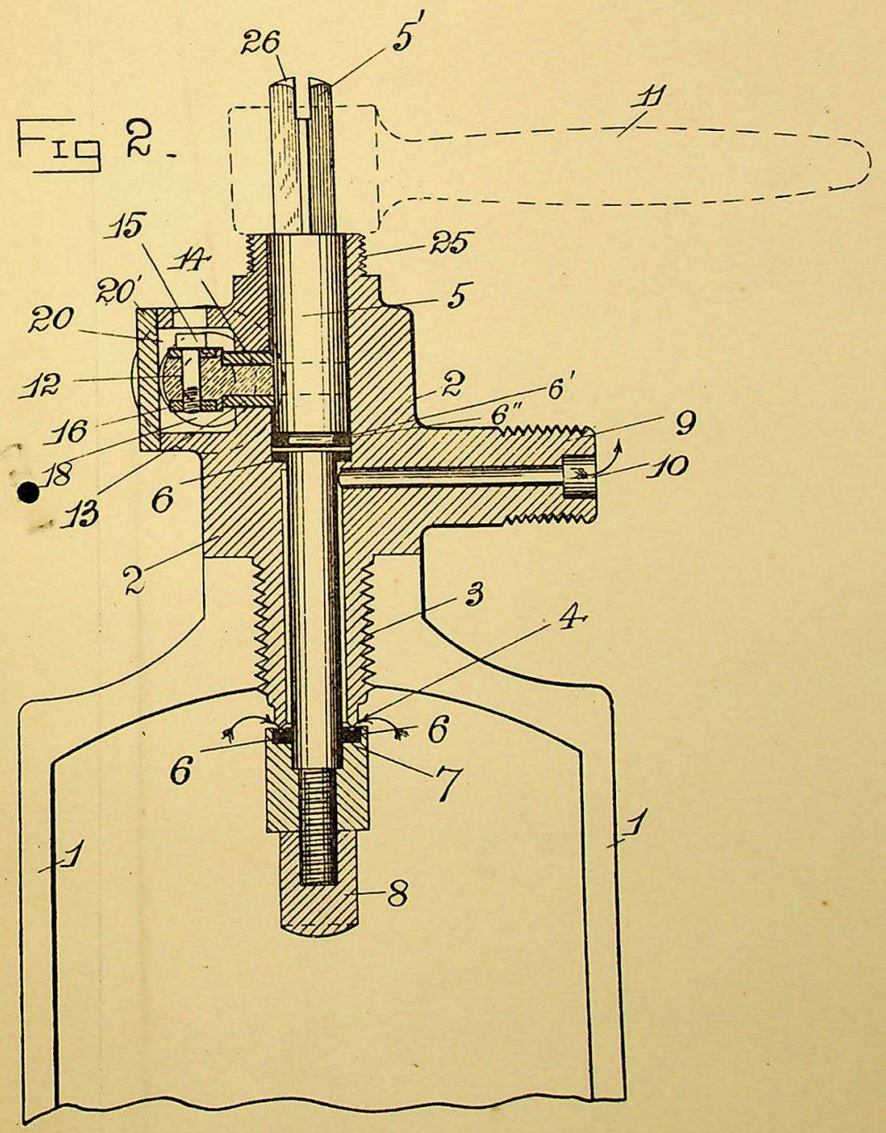


FIG 2.



220. Metallic Stand for Soda Water Vessels.

[This Drawing is a reproduction of the Original on a reduced scale]

9196
1897.
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N° 9196 A.D. 1897

Date of Application, 10th Apr., 1897—Accepted, 5th June, 1897

DUPLICATE

COMPLETE SPECIFICATION.

Improved Valve, applicable to Vessels Containing Compressed Gas, Gases, or Gaseous Liquids.

We, JOSEPH CHARLES PLUNKETT, Surgeon Dentist, of 173 Stroud Green Road, London N. and GUSTAVO DONAT Warehouseman, 3 and 4 Australian Avenue London E.C. do hereby declare the nature of this invention and in what manner the same is to be performed to be particularly described and ascertained in and by the following statement:—

Our invention consists in an improved construction of valve applicable to vessels containing compressed gas, gases, or gaseous liquids. The object we have more particularly in view being by means of the combination of interacting parts hereinafter described to ensure the hermetic sealing of cylinders and other vessels containing compressed gases or gaseous liquids, under all variations of internal pressure; to provide a ready means for liberating said gases or gaseous liquids in any required volume or quantity with ease and safety, and to prevent tampering with contents during transit.

The construction, application, and operation of our invention will be readily understood by reference to the accompanying drawing in which:—

Fig. 1, is a plan part being in section.

Fig. 2, is a part section on line A. B. Fig. 1.

In the drawing 1, is the steel cylinder or other vessel containing compressed gas or gaseous liquid. The body or frame 2, which contains the spring, guide rod, valve spindle, and other co-operating parts may be made of gunmetal, brass, iron, or other suitable material, and is secured thereto by the screwed nose piece 3, the extremity of which consists of a tapering ring which forms the valve seat 4. Through the body a hole is bored and to this is carefully fitted the metallic spindle 5, a packing ring or washer of vulcanized fibre 6, or equivalent suitable material being inserted at the point shewn. A grooved channel 6^1 is also formed on the spindle 5, and a soft rubber washer 6^{11} is shrunk thereon; this, has the effect of preventing any escape of gas past the spindle. The lower part of spindle 5, is screwed and fitted with the valve 7, which is packed at its upper end as shewn with a ring of vulcanized fibre 6, and secured to the spindle by a nut 8. The spindle 5, is turned down beneath the packing slightly smaller than the bore hole, so as to allow the gas or gaseous liquid to pass around it when the valve is opened, by means of the hole 10 to the screwed union outlet 9.

The opposite projecting end of the spindle may be shaped to a square section 5^1 and fitted with a plain and removeable lever 11 of any convenient kind, see dotted lines Fig. 2, or a small hand wheel or other device may be mounted thereon or keyed thereto.

A stout steel or other tough metal pin or stud 12, is screwed, driven, riveted, or otherwise securely fastened into or through the swell upon spindle 5; a roller 13 of steel or other hard metal being so journaled thereon as to engage with, and travel along an inclined or helical slot 14, milled out or otherwise formed in the body. The upper end of the pin or stud 12, is hinged or pivoted by means of a screwed pin 15, to the slotted head 16, of the guide bar or rod 17, which is formed with a shoulder 18; a spiral spring 19, surrounds the guide bar or rod and abuts against the shoulder 18, thereon and the end wall 20 of the body 2, which is suitably cored out to receive it and fitted with a cover 20^1 screwed on. The guide

rod or bar 17, passes through the end wall of the body 2, and its end 21, bored and tapped, so that when charging the valve may be kept open by screwing in the shouldered plug 22, having a milled head 23, shewn in Fig. 1.

Another feature of our invention consists in affixing a metallic cap 24, over the projecting square or other shaped end of the spindle. This we attach preferably by screwing as shewn at 25, a hole 26, being cored or slotted through the cap and end of the spindle 5. In this is placed a pin, cotter, or equivalent device 27 the end of which is drilled as at 28, or otherwise fashioned so as to enable a padlock to be attached.

In this manner we prevent all tampering with the valve while travelling, or the loss of contents or damage from rough handling.

The operation of our invention is as follows :—A handle suitable for the purpose required being fitted to the squared or other shaped end of spindle 5, and pressure exerted upon it in such a direction as to open the valve, the roller 13 will be compelled to travel in the inclined milled groove 14, the valve 7, being thereby forced from its seat. It will be understood that the inclined or helical slot may be made right or left handed so as to enable the regulating handle operating the valve to be turned in either direction.

The escaping gas or gaseous liquid passes in the direction of the arrows through the bored hole 10, to the outlet 9, and thence to the rubber bag, bottle, or other receptacle for use. Since the act of opening the valve by the partial rotation of spindle also tends to compress the powerful spring 19, it is promptly and securely closed on pressure being removed quite independently of the pressure of the gas or gaseous liquid contained in the vessel, which is constantly diminishing as the contents are drawn off.

The valves generally employed for this purpose are what are known as conical screw down valves ; their efficiency being dependent upon the forcing together of two hard metallic conical surfaces, it follows, that a considerable effort is required to effectually close or keep such valves air tight ; on the other hand they sometimes become fixed, are always difficult to open, and cannot be successfully used for giving a steady supply of gas or gaseous liquid without the intervention of some form of regulating device. Our invention overcomes these defects and renders the control of heavy pressures safe, effective, and simple.

Part of the difficulty in keeping compressed gas or gaseous liquor regulating valves tight, arises from the formation or condensation of ice particles upon or between the valve faces ; the partial rotation of the spindle and valve described peculiar to our invention suffices to crush or liquefy such particles, and thereby overcomes this obstacle.

In some cases we may employ leather, pewter, lead or like soft metal as a valve facing.

We do not confine the construction of our improvements to the exact shape shewn ; as it will be readily understood that it may be altered in detail to suit the varying forms of gas or other bottles, cylinders, condensers, without departing from its distinctive features. To charge a cylinder or vessel fitted with our improvements the valve is opened to its full extent, and the plug 22, screwed into the protruding end of the tapped guide rod 17, as shewn in Fig. 1.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed we declare that what we claim is :—

1. The improved valve for regulating compressed gas, mixed gases, and gaseous liquids constructed and operating in the way and manner and for the purposes set forth.

2. In a valve for regulating the supply, or hermetically closing or sealing cylinders, gas or other bottles, or vessels containing compressed gas mixed gases or gaseous liquids, the combination and use of the partially rotating spindle 5, having a fibre metal, or other suitably faced valve threaded or fastened thereon and

closing against a metallic seating. The rubber packing 6[11] mounted as shewn, the stud 12, turning with spindle and carrying a metallic roller 13, which engages with a skew inclined or helical slot 14, in casing. The guide 17, flexibly secured to stud 12, surrounded by spring 19, the respective parts co-operating and interacting for the purposes set forth.

3. In valves for sealing and regulating compressed gas bottles or vessels containing gaseous liquids the combination with a partially rotating spindle fitted with a valve faced with vulcanized fibre or equivalent metallic or other packing, of a spring controlled roller mounted on stud thereon and travelling in a right or left handed inclined slot or groove formed in the body or casing for the purpose of opening said valve or closing the same, irrespective of the pressure of the contents of the vessel.

4. The combination with a valve for regulating or sealing compressed gases or gaseous liquids constructed as described of the tapped guide and the screwed plug co-operating therewith for maintaining the valve in the open position when charging.

5. The combination in or with a valve for regulating the supply to or from, or hermetically sealing bottles cylinders or vessels containing compressed gas, gases, or gaseous liquids of a cap 24, screwed or otherwise fastened to the body 2, and enclosing the square or other shaped end of spindle 5, the cotter or pin 27, passing through said cap and spindle, and the hole 28, therein for attaching a padlock or the like means of fastening same.

Dated this 10th day of April 1897.

FRANCIS M. ROGERS,
21 Finsbury Pavement, London, E.C., Agent for Applicants.

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